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Electricity Generation in Microbial Fuel Cell (MFC) by Bacterium Isolated from Rice Paddy Field Soil (Conference Paper)

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Abstract

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Microbial fuel cell (MFC) is an alternative approach in generating renewable energy by utilising bacteria that will oxidize organic or inorganic substrates, producing electrons yielded as electrical energy. Different species of exoelectrogenic bacteria capable of generating significant amount of electricity in MFC has been identified, using various organic compounds for fuel. Soil sample taken from rice paddy field is proven to contain exoelectrogenic bacteria, thus electricity generation using mixed culture originally found in the soil, and pure culture isolated from the soil is studied. This research will isolate the exoelectrogenic bacterial species in the rice paddy field soil responsible for energy generation. Growth of bacteria isolated from the MFC is observed by measuring the optical density (OD), cell density weight (CDW) and viable cell count. Mixed bacterial species found in paddy field soil generates maximum power of 77.62 μW and 0.70 mA of current. In addition, the research also shows that the pure bacterium in rice paddy field soil can produce maximum power and current at 51.32 μW and 0.28 mA respectively. © The Authors, published by EDP Sciences, 2018.

Indexed keywords

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Engineering uncontrolled terms: Bacterial species | Electrical energy | Electricity generation | Energy generations | Growth of bacteria | Inorganic substrates | Paddy field soils | Renewable energies

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